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ABSTRACT

This study investigated: (1) the differences in competition-cooperation behavior of male and female children in a two-person game; and (2) whether sex differences in behavior were affected by either the sex of the game partner or by instructions. Subjects were 72 urban, middle class boys and girls. Their mean age was 7 years 11 months. Children were tested in pair groupings which included included 12 boy-boy, 12 girl-girl and 12 boy-girl pairs. The object of the game used in the behavior evaluation was to move a marker from the middle of the game board to either goal. Each partner could move only one place at a time: towards his own goal (competitive moves), his partner's goal (cooperative moves) or sideways (neutral moves). After each pair had completed six trials of the game, instructions were given which either stressed group orientation and deemphasized competitiveness or stressed individual orientation and competitiveness. Twelve additional trial games were then played. Results indicated that girls show a greater flexibility of behavior as a function of sex of partner or of instructions than boys do. In comparison to girls, boys show constant highly competitive behavior. (SDH)

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Sex Differences in Competition - Cooperation Behavior of Eight-Year-Old Children

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Paper presented at the Third Biennial Southeastern Conference of the Society for Research in Child Development, Chapel Hill, March, 1974.

Madsen and his associates (Kagan & Madsen, 1971; Madsen, 1967, 1971; Madsen & Shapira, 1970; Shapira & Madsen, 1969) have reported a series of cross-cultural studies of competition - cooperation behavior in children. Elementary-school-age children from urban middle SES backgrounds show a preference for competitive behavior in two- or four-person group games, even when such behavior is non-adaptive. Cross-cultural comparisons have shown relatively greater cooperation among Mexican village children than among lower or middle class American children; comparisons of different cultural groups within the United States indicate greater cooperation among Mexican-American and Blackfoot Indian children than among urban white children. These differences are usually attributed to differences in social values of the cultures and concommitant differences in child-rearing practices, which give rise to differential interdependent behavior among the cultures investigated.

The present study investigated sex differences in competition - cooperation within an urban, middle class sample. The impetus for this investigation was a consideration of stereotypes for male-female behavior in the U. S. culture, which suggested that the male should show greater competitiveness and task orientation than the female, who is often described as "dependent, noncompetitive, empathic, yielding, and showing an 'interpersonal orientation'." (Bardwick & Douvan, 1971). If these characteristics are being learned by eight-year-old children, it would be expected that males should show higher competition than females. Although previous studies have not focused on sex differences in competition - cooperation, two studies suggested a tendency for more competitive behavior in boys than in girls (Madsen & Shapira, 1970, Exp. I; Miller & Thomas, 1972, Exp. I).

Instructions have also been shown to affect the extent to which children show competition or cooperation. When the task involves a "group reward" such that every child is given a prize when a trial is completed, cooperation is high. But when children are then switched to a condition in which individual rewards are given, competition increases greatly (Madsen & Shapira, 1970, Exp. I; Miller & Thomas, 1972; Nelson & Madsen, 1969; Shapira & Madsen, 1969) even though competitive behavior prevents any child from receiving a reward. When the task is changed so that competitive behavior is adaptive, children show high competitiveness (Madsen & Shapira, 1970, Exp. II; Miller & Thomas, 1972, Exp. II). The present study used instructions which emphasized either group or individual performance, in order to determine whether children would show sex differences in the extent to which they responded to instructions.

A two-person game was used to compare the performances of boys and girls tested with same-sex or opposite-sex partners. We were interested in whether a sex difference would appear, and further, whether sex differences would be affected either by the sex of the game partner or by instructions.

Method

Subjects were 36 boys and 36 girls from a private school in a middle-class suburb of New Orleans. The children ranged in age from seven to nine years, with a mean age of 7 years 11 months. Children were tested in pairs, arranged by sex so that there were 12 boy-boy pairs, 12 girl-girl pairs, and 12 boy-girl pairs.

The two-person game used to test competition - cooperation was a game board, previously used by Kagan & Madsen (1971), which consisted of a 7 x 7 matrix of circles, each two inches in diameter. A schematic of the game board

is shown on your handout. As indicated there, the circles on the board were connected vertically and horizontally by straight lines indicating the direction of possible moves (diagonal moves were not permitted). A pair of subjects played the game while seated at opposite sides of the board. The object of the game was to move a marker from the middle of the matrix (at x) to either goal. Goals are indicated by the letter G on the handout. Children could move only one place at a time, and their moves could be scored as competitive (child moves marker toward himself), cooperative (child moves marker toward other player) or neutral (a move sideways, which does not contribute to either child's eventually attaining the goal).

Each trial began with the marker centered at x. Subjects alternated moves, continuing either until the marker reached a goal or until each child had made ten moves. Subjects in a pair alternated first moves on adjacent trials. Competition in this game is obviously maladaptive, in that it prevents either child from reaching his goal and receiving a prize. Only one subject could receive a prize on any given trial, but it would be possible for children to share prizes over trials by helping each other within trials. Prizes were tokens that could be turned in at the end of the experiment for small amounts of money.

All pairs were first given a description of the rules of the game, including an explanation of possible moves and emphasis on moving one circle at a time. Instructions concerning rewards were assumed to convey neither a group nor a strongly individualistic orientation, since they simply conveyed the necessary information about each child's goal and when rewards would be given. Each pair then completed six trials on the game.

PS 007494

After the first six trials, an additional manipulation was introduced. For half of the pairs in each subject group, the experimenter now gave "group orientation" instructions, which were designed to stress group orientation and deemphasize competitiveness. These were basically a restatement of the rules of the game, but with the experimenter speaking to the two children as a unit, as follows: "If we move the marker to this circle, we can give the prize to (Subject 1); if we move it to this circle, we can give it to (Subject 2)." The experimenter stressed "we" and did not refer to the goals in a possessive sense. For the remaining subjects, the experimenter gave "individual orientation" instructions, in which changes of wording were made so as to stress individuality and possessiveness. For example, the experimenter talked to each child individually, and identified each goal as belonging to one child or the other. All pairs were given twelve additional trials following these instructions.

For analysis, trials were divided into three blocks of six trials each. All pairs received the first block under neutral instructions, the second block after either group or individual orientation instructions, and the third block simply a continuation without additional manipulations. The third block was included to see if learning would occur as practice with the task increased. Scores used in analysis were the number of rewards obtained by a pair or individual child within each trial block, and the number of competitive, cooperative or neutral responses made by each pair of children or each individual child.

Results

The first set of analyses was performed on data for the 36 subject pairs, with Pair Type (boy-boy, girl-boy, or girl-girl) and Instructions as between -

subjects variables. For number of rewards obtained, the only significant effect was Instructions, $F(1, 30) = 7.52$, $p < .01$, with group orientation instructions producing a higher number of rewards (greater cooperation) ($\bar{X} = 1.76$) than individual orientation instructions ($\bar{X} = .67$). Sex of players did not significantly affect rewards obtained.

A more sensitive analysis of tendency to compete or cooperate is possible using the tabulations of types of moves made by each pair. For the analysis of these scores, the most interesting effect was an interaction between Pair Type and Response Type, $F(4, 60) = 5.23$, $p < .005$, which is depicted in Table 1. For both boy-boy and boy-girl pairs, significantly more competitive responses are made than other types of response. For the girl-girl pairs only, the number of neutral responses does not differ from the number of competitive responses. Girls do make more competitive than cooperative responses, however, according to the Scheffe follow up procedure. This analysis also yielded a significant main effect of Instructions, with more total moves (higher competitiveness) after individual orientation instructions than after group orientation. $F(1, 30) = 8.15$. $p < .01$. A main effect of Trial Blocks, $F(2, 60) = 3.29$, $p < .05$ showed a decrease in responses over the three blocks of trials. A main effect of Response Type, $F(2, 60) = 230.24$, $p < .001$, showed a prevalence of competitive responses, with lesser numbers of cooperative or neutral responses. An interaction of Response Type with Trials, $F(10, 30) = 1.88$, $p < .05$, indicates that the predominant competitive responses showed a tendence to increase over the session, while the neutral and cooperative responses tended to decrease. Therefore, the major conclusion regarding sex differences thus far is that, as indicated in Table 1, girls playing the game with other girls make a greater number of neutral responses than do other subject groups.

A second question of interest was whether children's behavior in the task was

influenced by the sex of the child with whom they "played the game." In order to test this, we randomly selected 12 boys and 12 girls from the same-sex pairs (one from each pair) and compared them with the 12 boys and 12 girls who performed in the boy-girl pairs. Table 2 shows mean response types for these groups. For boys, no differences in performance as a function of either sex of partner or instructions was obtained. In the analysis of rewards received by these boys, the only significant effect was Trial Blocks, $F(2, 40) = 3.81$, $p < .05$, which reflected an increase in the number of rewards obtained in the third trial block. For type of moves, these boys showed a highly significant effect of Response Type, $F(2, 40 = 166.46$, $p < .001$, which reflects the predominant use of competitive responses rather than cooperative or neutral responses by the boys.

A similar analysis was performed on girls' scores. Girls rewards and type of move were both affected significantly by instructions, so that more rewards were received following group orientation instructions ($\bar{X} = 1.00$) than after individual orientation ($\bar{X} = .25$), $F(1, 20) = 6.09$, $p < .05$. Also, girls made less total moves after group than after individual orientation, $F(1, 20) = 5.76$ $p < .05$. Both of the scores, then, reflect a greater sensitivity of the girls to the instructions given by the experimenter. Were girls also sensitive to the sex of the children who were their partners in the game? As indicated in Table 2, girls tested with boys showed significantly more competitive responses than neutral or cooperative responses ($p < .05$), while girls tested with other girls as partners did not differ in the number of competitive vs. neutral responses, and showed a borderline difference in the comparison of competitive vs. cooperative responses. These effects appear in an interaction of Sex of Partner by Response Type, $F(2, 40) = 5.22$, p.
(There was also a main effect of Response Type, $F(2, 40) = 126.78$, $p < .001$).

It can be concluded, then, that girls are indeed sensitive to the sex of the partner they play the game with. Boys as partners evoke competitive behavior that is not at all as predominant in girls' play when their partner is another girl. Finally, the analysis of girls' scores also yielded an interaction of Instructions by Trial Blocks by Response Types, $F(4, 80) = 3.34$, $p < .05$. This interaction reflects a tendency for girls' competitive responses to increase or decrease following appropriate instructions, while neutral responses drop slightly and cooperative responses stay at a low level.

In summary, then, girls show a greater flexibility of behavior as a function of sex of partner or of instructions than boys do. Relative to girls, boys show constant highly competitive behavior, regardless of instructions or game partner. These findings for eight-year-old children are consistent with the findings of research on college students' performance in small-group game interactions. Vinacke (1959) and Uesugi and Vinacke (1963) found that women were less willing to compete than men, and were more likely than men to assume neutral, non-remunerative conclusions to problems. Females working in triads which were to decide the allotment of a prize made more alliances, more often shar equally, and tended to bargain less extensively than did males in the same task. Vinacke observes that among these college students, the females appeared to be less concerned with winning, as such, and more concerned with arriving at a fair and friendly solution to the problem. In the present experiment, the girls' relatively high use of the neutral move option indicates that they avoided competition with a female partner, even though they apparently did not work out extensive cooperation. An older group of females might be more likely to reach a verbal agreement regarding cooperation, and thus perform in the manner described above.

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TABLE 1

Mean Number of Competitive, Neutral and Cooperative Responses for Three Arrangements of Sex of Subject Pairs

	Response Type		
Sex of Pair	Competitive	Neutral	Cooperative
Boy-Boy (N = 12 prs)	15.00	3.31	.27
Boy-Girl (N = 12 prs)	13.90	3.52	.17
Girl-Girl (N = 12 prs)	11.00	5.87	.27

TABLE 2

Mean Number of Competitive, Neutral and Cooperative Responses for Individual Boys or Girls Tested with Same or Opposite Sex Partners

	Response Type		
	Competitive	Neutral	Cooperative
Boys tested with boys (N = 12)	7.44	1.56	.28
Boys tested with girls (N = 12)	7.04	1.70	.09
Girls tested with boys (N = 12)	6.84	1.83	.09
Girls tested with girls (N = 12)	5.52	2.98	.17

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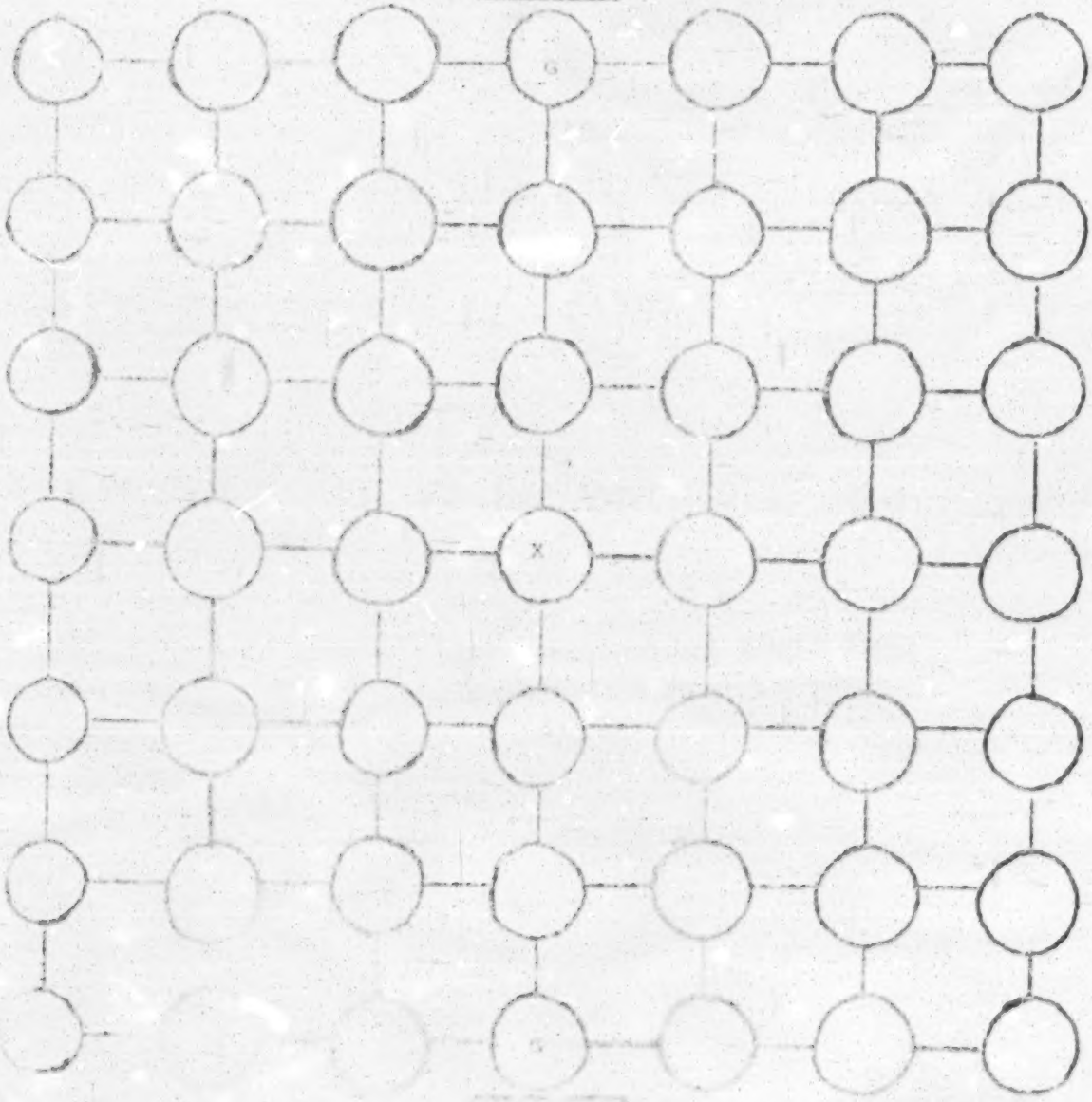
The Game Board Used to Measure

Competition - Cooperation

Subject 1



Subject 2